



DEPARTMENT OF SURGERY

**DIVISION OF HEPATOPANCREATOBILIARY
AND ADVANCED GASTROINTESTINAL SURGERY**

GENERAL SURGERY WHITE (SGW)

University Hospital

House Officer I
House Officer II
House Officer III
House Officer V

Curriculum/Rotation Goals and Objectives for
Surgery Residents

Service –Surgery General White

House Officer I

Goal: The goal of the HO I rotation in Hepatopancreatobiliary Surgery is to build on the resident's overall general surgery knowledge and clinical experience and to develop a concentrated exposure and experience within the field of pancreatic and hepatobiliary surgery. Learning opportunities will be focused in the domains of benign and malignant diseases of the liver, pancreas, biliary tract, duodenum/peri-ampullary lesions, and management of inflammatory disease of the pancreas. In addition, HOI residents will have opportunities to learn about pre-operative selection and operative techniques for inguinal hernia repair.

Learning Objectives:

Patient Care:

By the end of the HPB Surgery rotation, the HO I resident will be able to:

1. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families
2. Gather essential and accurate information about their patients, especially regarding benign and neoplastic diseases of the gallbladder, pancreas, liver, and biliary tract
3. Elicit signs and symptoms of possible endocrine and exocrine insufficiency in patients with inflammatory disease of the pancreas or post-pancreatectomy
4. Take a thorough family history with particular attention to familial history of pancreatitis and potential kindreds at risk for hepatopancreatobiliary and peri-ampullary malignancy
5. Perform a thorough physical examination and be familiar with signs of malnutrition and signs of metastatic disease, e.g. peri-umbilical nodules or supra-clavicular nodes in patients with malignant or inflammatory disease of the pancreas, liver, and biliary tract
6. Distinguish a Murphy's sign and other exam findings consistent with benign gallbladder disease
7. Suggest diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment
8. Counsel and educate patients and their families, under the guidance and direction of senior residents and faculty
9. Use information technology effectively to support patient care decisions and patient education
10. Perform HO1 level appropriate operative cases (under supervision) such as inguinal hernia repair and laparoscopic cholecystectomy and colonoscopy/EGD after the appropriate proficiency based curricula have been completed (Silver for Lap Skills and completion of colonoscopy curriculum)
11. Collaborate with health care professionals, including those from other disciplines, to provide patient-focused care, with a particular attention to the multidisciplinary care of the hepatopancreatobiliary surgery patient which includes interactions with gastroenterology, medical oncology, radiation oncology, pathology, radiology, and RN and mid-level providers from the clinic and inpatient services

Medical Knowledge:

By the end of the HPB Surgery rotation, the HO I resident will be able to:

1. Neoplastic Disease of the Pancreas

- a. Define the anatomy of the pancreas and its anatomic relationship to other adjacent structures
- b. Cystic Neoplasms
 - Mucinous Cystic Neoplasms
 - i. Describe the cross-sectional imaging characteristics of IPMN and MCN
 - ii. Describe the role of endoscopic ultrasound in the evaluation of mucinous cystic

neoplasms

iii. Recite the indications for surgical resection for IPMN and MCN based upon international consensus criteria

- Non-Mucinous Cystic Neoplasms

- i. Describe the appearance of serous cystadenoma, cystic pancreatic neuroendocrine tumor, and solid pseudopapillary tumor on cross-sectional imaging

- ii. Discuss the malignant potential of each non-mucinous neoplasm noted above

c. Solid Neoplasms

- Non-functioning Pancreatic Neuroendocrine Tumor (NF PNET)

- i. Describe the cross-sectional imaging characteristics of a NF PNET

- ii. Discuss the role of Chromogranin A, Pancreatic Polypeptide, and Pancreastatin in the diagnosis and surveillance for NF PNET

- iii. Discuss the implications of an underlying familial condition of von Hippel Lindau and Multiple Endocrine Neoplasia - 1 in the management of NF PNET

- Pancreatic Adenocarcinoma

- i. Discuss the evaluation of a patient presenting with painless jaundice and the significance of a double duct sign

- ii. Review the sensitivity and specificity of CA 19-9

- iii. Discuss the relevant germline mutations which carry an increased risk of pancreatic adenocarcinoma such as BRCA 2, p16 mutation, etc.

2. Inflammatory Disease of the Pancreas

a. Acute Pancreatitis

- Recite the Atlanta Criteria for the definition of acute pancreatitis

- Describe the difference in between a pancreatic pseudocyst and walled off pancreatic necrosis
- Discuss the potential sequelae of severe acute pancreatitis with respect to vascular and gastrointestinal complications

- Describe the recommended management for mild gallstone pancreatitis in an otherwise fit patient

b. Chronic Pancreatitis

- Describe the optimal pain management strategy for a patient with chronic pancreatitis

- Describe the range of normal diameter of the pancreatic duct

- Describe the signs and symptoms of pancreatic exocrine insufficiency

- Identify risk factors for ongoing injury to the pancreas and recurrent pancreatitis

3. Hepatobiliary Disease

a. Understand the surface anatomy of the liver and the anatomic relationship to surrounding structures

b. List the differential diagnosis of liver lesions: benign and malignant, primary and metastatic

c. Appreciate the non-invasive and invasive modalities that can be used to investigate suspected lesions or disorders of the liver and biliary tree

d. Describe the post-operative complications that can occur with hepatectomy and how to recognize them

4. Benign Gallbladder Disease

a. Discuss the management of asymptomatic and symptomatic cholelithiasis and indications for operative intervention

b. Describe the sensitivity and specificity of RUQ US for the diagnosis of acute cholecystitis and the role of HIDA scan

c. Recite the recommendations of the Tokyo guidelines for the management of acute cholecystitis and acute cholangitis

d. Discuss the behaviors leading to a culture of safety in performing cholecystectomy

e. Describe the boundaries of the critical view of safety and key landmarks to facilitate safe dissection of the cystic plate

Systems-Based Practice:

By the end of the HPB Surgery rotation, the HO I resident will be able to:

1. Explain the role of systems in delivering optimal health care, including how "system problems" contribute to quality problems
2. Explain how their patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice
3. Explain how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources
4. Practice cost-effective health care and resource allocation that does not compromise quality of care
5. Advocate for quality patient care and assist patients in dealing with system complexities
6. Collaborate with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance

Practice-Based Learning and Improvement:

By the end of the HPB Surgery rotation, the HO I resident will be able to:

1. Analyze patient care experience and any near miss or complication using a process improvement methodology as taught in the Quality Improvement Curriculum.
2. Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems
3. Participate in all Hepatopancreatobiliary educational activities including Multi-disciplinary Tumor Conferences, Advanced Endoscopy Gastrointestinal and HPB Surgery Conference, HPB Surgery conference, Multi-Site HPB Grand Rounds, and weekly pre-operative teaching conference.
4. Describe/design a systematic approach to evaluate the results of one's own practice
5. Use information technology to manage information, access on-line medical information; and support their own education

Professionalism:

By the end of the HPB Surgery rotation, the HO I resident will be able to:

1. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development
2. Demonstrate appropriate sensitivity to the hepatopancreatobiliary surgery patient population, and understand how their needs may be different from other patients
3. Recognize the importance and impact of timely record keeping and prompt and professional return of pages on the quality of general surgery care
4. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices
5. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities
6. Demonstrate appreciation of the roles of all members of the healthcare team.

Interpersonal and Communication Skills:

By the end of the HPB Surgery rotation, the HO I resident will be able to:

1. Create and sustain a therapeutic and ethically sound relationship with patients
2. Demonstrate and employ effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills
3. Work effectively with others as a member or leader of a health care team or other professional group
4. Demonstrate the ability to interview and evaluate the patient, especially the newly-diagnosed cancer patient

Service – Surgery General White

House Officer II

Goal: The goal of the HO II rotation in Hepatopancreatobiliary Surgery is to build on the resident's overall general surgery knowledge and clinical experience and to develop a greater depth of experience in the initial evaluation and management of patients presenting with benign and malignant diseases of the liver, pancreas, biliary tract, duodenum/peri-ampullary lesions, and inflammatory disease of the pancreas. Operative exposure to these diseases will increase.

Learning Objectives:

Patient Care:

By the end of the HPB rotation, the HO II resident will be able to:

1. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families
2. Gather essential and accurate information about their patients, especially regarding benign and neoplastic diseases of the gallbladder, pancreas, liver, and biliary tract
3. Elicit signs and symptoms of possible endocrine and exocrine insufficiency in patients with inflammatory disease of the pancreas or post-pancreatectomy
4. Evaluate patients in the urgent and emergent settings with hepatopancreatobiliary disease and recognize signs and symptoms of decompensation requiring escalation of care
5. take a thorough family history with particular attention to familial history of pancreatitis and potential kindreds at risk for hepatopancreaticobiliary and peri-ampullary malignancy
6. Perform a thorough physical examination and be familiar with signs of malnutrition and signs of metastatic disease, e.g. peri-umbilical nodules or supra-clavicular nodes in patients with malignant or inflammatory disease of the pancreas, liver, and biliary tract
7. Distinguish a Murphy's sign and other exam findings consistent with benign gallbladder disease
8. Suggest diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment
9. Counsel and educate patients and their families, under the guidance and direction of senior residents and faculty
10. Use information technology effectively to support patient care decisions and patient education
11. Perform operative cases (under supervision) such as inguinal hernia repair and laparoscopic cholecystectomy and colonoscopy/EGD after the appropriate proficiency based curricula have been completed (Silver for Lap Skills and completion of colonoscopy curriculum), and assist with portions of more complex hepatopancreatobiliary operations such as cholecystectomy and gastrojejunostomy performed during a pancreaticoduodenectomy
12. Collaborate with health care professionals, including those from other disciplines, to provide patient-focused care, with a particular attention to the multidisciplinary care of the hepatopancreatobiliary surgery patient which includes interactions with gastroenterology, medical oncology, radiation oncology, pathology, radiology, and RN and mid-level providers from the clinic and inpatient services
13. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families

Medical Knowledge:

By the end of the HPB rotation, the HO II resident will be able to:

1. Neoplastic Disease of the Pancreas

- a. Define the anatomy of the pancreas and its anatomic relationship to other adjacent structures
- b. Cystic Neoplasms
 - Mucinous Cystic Neoplasms
 - i. Describe the cross-sectional imaging characteristics of IPMN and MCN
 - ii. Describe the role of endoscopic ultrasound in the evaluation of mucinous cystic neoplasms and the role of cyst fluid CEA level
 - iii. Recite the indications for surgical resection for IPMN and MCN based upon international consensus criteria
 - Non-Mucinous Cystic Neoplasms
 - i. Describe the appearance of serous cystadenoma, cystic pancreatic neuroendocrine tumor, and solid pseudopapillary tumor on cross-sectional imaging
 - ii. Discuss the malignant potential of each
 - iii. Discuss the indications for resection of each
- c. Solid Neoplasms
 - Non-functioning Pancreatic Neuroendocrine Tumor (NF PNET)
 - i. Describe the cross-sectional imaging characteristics of a NF PNET
 - ii. Discuss the role of Chromogranin A, Pancreatic Polypeptide, and Pancreastatin in the diagnosis and surveillance for NF PNET
 - iii. Discuss the implications of an underlying familial condition of von Hippel Lindau and Multiple Endocrine Neoplasia - 1 in the management of NF PNET and indications for resection in each of these settings
 - iv. Discuss the relevance of Ki67 index, mitotic index, and histologic differentiation in the prognosis of NF PNET (WHO criteria)
 - Pancreatic Adenocarcinoma
 - i. Describe the NCCN parameters distinguishing resectable, borderline resectable, and unresectable pancreatic adenocarcinoma
 - ii. Review the sensitivity and specificity of CA 19-9
 - iii. Discuss the relevant germline mutations which carry an increased risk of pancreatic adenocarcinoma such as BRCA 2, p16 mutation, etc.
 - iv. Discuss the appropriate staging evaluation for a patient with pancreatic adenocarcinoma including the role of endoscopic ultrasound and ERCP

2. Inflammatory Disease of the Pancreas

- a. Acute Pancreatitis
 - Recite the Atlanta Criteria for the definition of acute pancreatitis
 - Describe the difference in between a pancreatic pseudocyst and walled off pancreatic necrosis and the implications for management of each
 - Discuss the potential sequelae of severe acute pancreatitis with respect to vascular and gastrointestinal complications
 - Discuss supportive management strategies for patients with pancreatitis and systemic inflammatory response syndrome including the role of antibiotics
- b. Chronic Pancreatitis
 - Describe the optimal pain management strategy for a patient with chronic pancreatitis
 - Describe inpatient management strategies for the management of endocrine insufficiency in the setting of chronic pancreatitis
 - Describe the signs and symptoms of pancreatic exocrine insufficiency and the potential vitamin and nutritional deficiencies which can result from longstanding malabsorption
 - Identify risk factors for ongoing injury to the pancreas and recurrent pancreatitis

3. Hepatobiliary Disease

- a. Describe the segmental anatomy of the liver and the nomenclature used to describe liver resections.
- b. Describe the common variants of extrahepatic bile duct anatomy.
- c. Develop a diagnostic approach for assessment of a newly discovered liver mass.
- d. Describe the comparative advantages and disadvantages of CT, MRI, and ultrasound for

assessment of the liver parenchyma

4. Benign Gallbladder Disease

- a. Discuss the management of asymptomatic and symptomatic cholelithiasis and indications for operative intervention
- b. Describe the sensitivity and specificity of RUQ US for the diagnosis of acute cholecystitis and the role of HIDA scan.
- c. Recite the recommendations of the Tokyo guidelines for the management of acute cholecystitis and ascending cholangitis
- d. Describe the diagnostic tools utilized to make a diagnosis of acalculous cholecystitis
- e. Discuss the behaviors leading to a culture of safety in performing cholecystectomy
- f. Describe the boundaries of the critical view of safety and key landmarks to facilitate safe dissection of the cystic plate
- g. Discuss the indications for performance of an intra-operative cholangiogram and pre- op EUS, ERCP, and MRCP

Systems-Based Practice:

By the end of the HPB rotation, the HO II resident will be able to:

1. Apply their knowledge of systems in delivering optimal health care, including how "system problems" contribute to quality problems
2. Explain how their patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice
3. Describe how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources
4. Define cost-effective health care and discuss how to address issues of resource allocation without compromising quality of care
5. Advocate for quality patient care and assist patients in dealing with system complexities
6. Collaborate with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance

Practice-Based Learning and Improvement:

By the end of the HPB rotation, the HO II resident will be able to:

1. Analyze patient care experience and any near miss or complication using a process improvement methodology as taught in the Quality Improvement Curriculum
2. Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems
3. When given online resources, conduct an effective literature search about a given hepatopancreatobiliary surgery topic
4. Participate in all Hepatopancreatobiliary educational activities including Multi-disciplinary Tumor Conferences, Advanced Endoscopy Gastrointestinal and HPB Surgery Conference, HPB Surgery conference, Multi-Site HPB Grand Rounds, and weekly pre-operative teaching conference
5. Describe/design a systematic approach to evaluate the results of one's own practice
6. Use information technology to manage information, access on-line medical information; and support their own education
7. Evaluate experimental design and interpret results in published literature, including randomization, sampling error, blinded studies, prospective versus retrospective evaluations, and the advantages and weaknesses of each; knows the meaning of confidence intervals and "P" value in suggesting statistical significance

Professionalism:

By the end of the HPB rotation, the HO II resident will be able to:

1. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development
2. Demonstrate appropriate sensitivity to the hepatopancreatobiliary surgery patient population, and understand how their needs may be different from other patients
3. Recognize the importance and impact of timely record keeping and prompt and professional return of pages on the quality of general surgery care
4. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices
5. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities
6. Demonstrate appreciation of the roles of all members of the healthcare team.

Interpersonal and Communication Skills:

By the end of the HPB rotation, the HO II resident will be able to:

1. Collaborate with other health care personnel, being sensitive to their roles and abilities
2. Communicate with colleagues and staff in a manner that is consistent with patient-centered focus of the health care team
3. Communicate basic care decisions with patients and their families, explaining recommendations to them in terms each individual can comprehend
4. Demonstrate respect for patients' right to privacy and autonomy
5. Demonstrate respect for the sexual orientation, moral, ethical, or religious characteristics of the patient and family, and other members of the healthcare team, and an ability to work with a culturally diverse range of patients and colleagues
6. Demonstrate and employ effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills

Service – Surgery General White

House Officer III

Goal: The goal of the HO III rotation in Hepatopancreatobiliary Surgery is to build on the resident's overall general surgery knowledge and clinical experience and to develop a greater depth of experience in the initial evaluation and management of patients presenting with benign and malignant diseases of the liver, pancreas, biliary tract, duodenum/peri-ampullary lesions, and inflammatory disease of the pancreas. Operative learning opportunities will include increased participation in more complex hepatobiliary and pancreas operations and greater leadership in pre-operative planning.

Learning Objectives:

Patient Care:

By the end of the HPB rotation, the HO III resident will be able to:

1. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families
2. Gather essential and accurate information about their patients, especially regarding benign and neoplastic diseases of the gallbladder, pancreas, liver, and biliary tract
3. Elicit signs and symptoms of possible endocrine and exocrine insufficiency in patients with inflammatory disease of the pancreas or post-pancreatectomy
4. Evaluate patients in the urgent and emergent settings with hepatopancreatobiliary disease and recognize signs and symptoms of decompensation requiring escalation of care
5. take a thorough family history with particular attention to familial history of pancreatitis and potential kindreds at risk for hepatopancreatobiliary and peri-ampullary malignancy
6. Suggest diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment
7. Counsel and educate patients and their families, under the guidance and direction of senior residents and faculty, including discussion of the risks, benefits, and alternatives of proposed hepatopancreatobiliary operations
8. Use information technology effectively to support patient care decisions and patient education
9. Perform operative cases (under supervision) such as inguinal hernia repair and laparoscopic cholecystectomy and colonoscopy/EGD after the appropriate proficiency based curricula have been completed (Silver for Lap Skills and completion of colonoscopy curriculum), and assist with portions of more complex hepatopancreatobiliary operations such as cholecystectomy and gastrojejunostomy performed during a pancreaticoduodenectomy
10. Collaborate with health care professionals, including those from other disciplines, to provide patient-focused care, with a particular attention to the multidisciplinary care of the hepatopancreatobiliary surgery patient which includes interactions with gastroenterology, medical oncology, radiation oncology, pathology, radiology, and RN and mid-level providers from the clinic and inpatient services
11. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families

Medical Knowledge:

By the end of the HPB rotation, the HO III resident will be able to:

1. Neoplastic Disease of the Pancreas

- a. Define the anatomy of the pancreas and its anatomic relationship to other adjacent structures including adjacent vasculature and adjacent organs which impact resectability

b. Cystic Neoplasms

- Mucinous Cystic Neoplasms

- i. Describe the cross-sectional imaging and advanced endoscopic (EUS and ERCP) characteristics of IPMN and MCN
- ii. Describe the role of endoscopic ultrasound in the evaluation of mucinous cystic neoplasms and the role of cyst fluid CEA level
- iii. Recite the indications for surgical resection for IPMN and MCN based upon international consensus criteria
- iv. Recommend surveillance algorithms for patients with IPMN based on the best available evidence
- v. Discuss the implication of epithelial sub-type in IPMN with respect to prognosis

- Non-Mucinous Cystic Neoplasms

- i. Describe the appearance of serous cystadenoma, cystic pancreatic neuroendocrine tumor, and solid pseudopapillary tumor on cross-sectional imaging
- ii. Discuss the malignant potential of each
- iii. Discuss the indications for resection of each

c. Solid Neoplasms

- Non-functioning Pancreatic Neuroendocrine Tumor (NF PNET)

- i. Describe the cross-sectional imaging characteristics of a NF PNET and indications for resection
- ii. Discuss the implications of an underlying familial condition of von Hippel Lindau and Multiple Endocrine Neoplasia - 1 in the management of NF PNET and indications for resection in each of these settings
- iii. Discuss the relevance of Ki67 index, mitotic index, and histologic differentiation in the prognosis of NF PNET (WHO criteria)

- Pancreatic Adenocarcinoma

- i. Describe the NCCN parameters distinguishing resectable, borderline resectable, and unresectable pancreatic adenocarcinoma
- ii. Discuss the relevant germline mutations which carry an increased risk of pancreatic adenocarcinoma such as BRCA 2, p16 mutation, etc.
- iii. Discuss the appropriate staging evaluation for a patient with pancreatic adenocarcinoma including the role of endoscopic ultrasound and ERCP including the sensitivity of brushings for diagnosis and indications for pre-operative endobiliary stent placement

2. Inflammatory Disease of the Pancreas

a. Acute Pancreatitis

- Describe the difference in between a pancreatic pseudocyst and walled off pancreatic necrosis
- Discuss the role of percutaneous drains, endoscopic, and surgical management strategies and timeline considerations for each
- Discuss the potential sequelae of severe acute pancreatitis with respect to vascular and gastrointestinal complications and management strategies to address these complications when they occur
- Discuss supportive management strategies for patients with pancreatitis and systemic inflammatory response syndrome including the role of antibiotics

b. Chronic Pancreatitis

- Describe the optimal pain management strategy for a patient with chronic pancreatitis
- Describe the signs and symptoms of pancreatic exocrine insufficiency and the potential vitamin and nutritional deficiencies which can result from longstanding malabsorption
- Describe the indications and anticipated results for surgical intervention in the setting of chronic pancreatitis
- Describe the endoscopic therapeutic options and anticipated results for treatment of pancreatic duct stricture and intraductal pancreatic stone disease

3. Hepatobiliary Disease

a. Describe the indications for resection of colorectal liver metastases

b. Discuss the determinants of eligibility for a liver resection: technical considerations, future liver remnant, hepatic disease, and comorbidities

- c. List the steps of a right hepatectomy
- d. Describe the typical imaging characteristics of hepatocellular carcinoma, intrahepatic cholangiocarcinoma, and colorectal liver metastases.
- e. Recite the NCCN guidelines for colorectal liver metastases and hepatocellular carcinoma
- f. Discuss the management of an incidental gallbladder carcinoma discovered following cholecystectomy and indications for hepatic resection and lymphadenectomy

4. Benign Gallbladder Disease

- a. Report the recommendations of the Tokyo guidelines for the management of acute cholecystitis and ascending cholangitis
- b. Describe the diagnostic tools utilized to make a diagnosis of acalculous cholecystitis, and therapeutic options and indications for trans-hepatic percutaneous cholecystostomy tube and cholecystectomy
- c. Discuss the behaviors leading to a culture of safety in performing cholecystectomy
- d. Describe the boundaries of the critical view of safety and key landmarks to facilitate safe dissection of the cystic plate and describe error traps leading to vasculobiliary injury in the setting of inflammation
- e. Discuss the indications for performance of an intra-operative cholangiogram and pre- op EUS, ERCP, and MRCP
- f. Discuss the indications for operative intervention for documented gallbladder polyps and the role for laparoscopic versus open cholecystectomy
- g. Discuss the risk factors for bile leak after cholecystectomy, diagnostics, and management strategies

Systems-Based Practice:

By the end of the HPB rotation, the HO III resident will be able to:

1. Apply their knowledge of systems in delivering optimal health care, including how "system problems" contribute to quality problems
2. Apply systems knowledge to demonstrate how patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice
3. Compare and contrast how different types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources
4. Demonstrate cost-effective health care and discuss how to address issues of resource allocation without compromise quality of care
5. Advocate for quality patient care and assist patients in dealing with system complexities
6. Collaborate with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance

Practice-Based Learning and Improvement:

By the end of the HPB rotation, the HO III resident will be able to:

1. Analyze patient care experience and any near miss or complication using a process improvement methodology as taught in the Quality Improvement Curriculum. Identify opportunities for potential QI/Team Action Projects for the following year
2. Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems
3. When given online resources, conduct an effective literature search about a given hepatopancreatobiliary surgery topic
4. Participate in all Hepatopancreatobiliary educational activities including Multi-disciplinary Tumor Conferences, Advanced Endoscopy Gastrointestinal and HPB Surgery Conference, HPB Surgery conference, Multi-Site HPB Grand Rounds, and present a prospective plan at the weekly pre-operative teaching conference for cases for which they will be the lead surgeon
5. Evaluate experimental design and interpret results in published literature (or planned research),

including true randomization, sampling error, blinded studies, prospective versus retrospective evaluations, and the advantages and weaknesses of each; knows the distinction between dependent and independent variables under evaluation and knows the meaning of confidence intervals or "P" value in suggesting statistical significance

6. Describe/design a systematic approach to evaluate the results of one's own practice

7. Apply their ability to efficiently use information technology to manage information, access on-line medical information; and support their own education

Professionalism:

By the end of the HPB rotation, the HO III resident will be able to:

1. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development

2. Demonstrate appropriate sensitivity to the hepatopancreatobiliary surgery patient population, and understand how their needs may be different from other patients

3. Recognize the importance and impact of timely record keeping and prompt and professional return of pages on the quality of general surgery care, and set a positive example for junior peers

4. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices

5. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities

6. Demonstrate appreciation of the roles of all members of the healthcare team

Interpersonal and Communication Skills:

By the end of the HPB rotation, the HO III resident will be able to:

1. Collaborate with other health care personnel, being sensitive to their roles and abilities

2. Communicate with colleagues and staff in a manner that is consistent with patient-centered focus of the health care team and sets a positive example for junior peers

3. Communicate basic care decisions with patients and their families, explaining recommendations to them in terms each individual can comprehend

4. Demonstrate respect for patients' right to privacy and autonomy

5. Demonstrate respect for the sexual orientation, moral, ethical, or religious characteristics of the patient and family, and other members of the healthcare team, and an ability to work with a culturally diverse range of patients and colleagues

6. Demonstrate and employ effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills

Service – Surgery General White

House Officer V

Goal: The goal of the HO V rotation in Hepatopancreatobiliary Surgery is to build on the resident's overall general surgery knowledge and clinical experience and to develop a greater depth of experience in the initial evaluation and management of patients presenting with benign and malignant diseases of the liver, pancreas, biliary tract, duodenum/peri-ampullary lesions, and inflammatory disease of the pancreas. Operative learning opportunities will include more complex hepatobiliary and pancreas operations, with residents taking an increasing leadership role in performance of these operations, pre-operative planning, and direction of multi-disciplinary care.

Learning Objectives:

Patient Care:

By the end of the HPB rotation, the HO V resident will be able to:

1. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families
2. Gather essential and accurate information about their patients, especially regarding benign and neoplastic diseases of the gallbladder, pancreas, liver, and biliary tract
3. Elicit signs and symptoms of possible endocrine and exocrine insufficiency in patients with inflammatory disease of the pancreas or post-pancreatectomy
4. Evaluate patients in the urgent and emergent settings with hepatopancreatobiliary disease, recognize signs and symptoms of decompensation requiring escalation of care, and initiate initial management.
5. Demonstrate appropriate utilization of advanced endoscopic and interventional techniques for the management of inflammatory and neoplastic hepatopancreatobiliary disease and appropriate management of percutaneous drains and catheters
6. Propose diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment
7. Counsel and educate patients and their families, under the guidance and direction of senior residents and faculty, including discussion of the risks, benefits, and alternatives of proposed hepatopancreatobiliary operations
8. Use information technology effectively to support patient care decisions and patient education
9. Perform complex hepatobiliary and pancreas operations (under supervision) such as pancreaticoduodenectomy, hepatic resection, drainage procedures of the pancreas, and biliary reconstructions
10. Collaborate with health care professionals, including those from other disciplines, to provide patient-focused care, with a particular attention to the multidisciplinary care of the hepatopancreatobiliary surgery patient which includes interactions with gastroenterology, medical oncology, radiation oncology, pathology, radiology, and RN and mid-level providers from the clinic and inpatient services

Medical Knowledge:

By the end of the HPB rotation, the HO V resident will be able to:

1. Neoplastic Disease of the Pancreas

- a. Define the anatomy of the pancreas and its anatomic relationship to other adjacent structures including adjacent vasculature and adjacent organs which impact resectability
- b. Cystic Neoplasms

- Mucinous Cystic Neoplasms
 - i. Recite the indications for surgical resection for IPMN and MCN based upon international consensus criteria
 - ii. Discuss indications and evidence to support decision-making with respect to performance of total pancreatectomy in the setting of IPMN
 - iii. Recommend surveillance algorithms for patients with IPMN based on the best available evidence
 - iv. Discuss the implication of epithelial sub-type in IPMN with respect to prognosis
- Non-Mucinous Cystic Neoplasms
 - i. Discuss the management of large serous cystadenomas (>4cm) and recommended intervention based upon best available evidence.
- c. Solid Neoplasms
 - Non-functioning Pancreatic Neuroendocrine Tumor (NF PNET)
 - i. Discuss the relevance of Ki67 index, mitotic index, and histologic differentiation in the prognosis of NF PNET (WHO criteria)
 - ii. Discuss the management of metastatic and/or locally advanced PNET with respect to therapeutic options including indications for resection, targeted therapies, and cytotoxic chemotherapy
 - iii. Discuss the management options for small (< 1cm) asymptomatic PNET and defend recommendations with best available data
 - Pancreatic Adenocarcinoma
 - i. Discuss the anticipated surgical outcomes for patients with resected pancreatic adenocarcinoma and the impact of nodal positivity, margin status, vascular reconstruction, and other histopathologic criteria.
 - ii. Discuss surgical approaches possible for pancreatic tumors with reconstructible vascular abutment or encasement – discuss the implications of venous versus arterial involvement and reconstruction
 - iii. Discuss neoadjuvant and adjuvant therapeutic strategies for patients with pancreatic adenocarcinoma

2. Inflammatory Disease of the Pancreas

- a. Acute and Recurrent Acute Pancreatitis
 - Discuss the role of percutaneous drains, endoscopic, and surgical management strategies and timeline considerations for each, including the role of MIS surgical approaches
 - Discuss the potential sequelae of severe acute pancreatitis with respect to vascular and gastrointestinal complications and management of these complications
 - Discuss endoscopic and surgical management strategies for patients with disconnected pancreatic tail syndrome
- b. Chronic Pancreatitis
 - Describe the indications and anticipated results for surgical intervention in the setting of chronic pancreatitis including approaches for large duct disease (≥ 7 mm), small duct disease, and mass forming disease
 - Describe the endoscopic therapeutic options and anticipated results for treatment of pancreatic duct stricture and intraductal pancreatic stone disease
 - Discuss the indications for consideration of total pancreatectomy with islet autotransplantation
 - Describe the increased risk for the development of pancreatic cancer in the setting of chronic pancreatitis and approaches for differentiating mass forming pancreatitis and pancreatic adenocarcinoma

3. Hepatobiliary Disease

- a. Describe the criteria for resectability of a hilar cholangiocarcinoma.
- b. Describe the basic technique and underlying rationale for the following procedures to enhance remnant liver volumes: portal vein embolization/ligation, staged hepatectomy, and Associating Liver Partition and Portal vein Ligation for Staged hepatectomy (ALPPS).
- c. Discuss the principles, benefits, and risks of low central venous pressure anesthesia for liver resection.
- d. Discuss the combined intraoperative use of resection and ablation in the surgical management of colorectal liver metastases.

- e. Describe the common variants of portal vein anatomy.
- f. Describe the anatomic boundaries of hepatic sectional resections, e.g. left lateral section, right hepatic lobectomy, extended right hepatic lobectomy, left hepatic lobectomy, extended left hepatic lobectomy

4. Benign Gallbladder Disease

- a. Discuss the behaviors leading to a culture of safety in performing cholecystectomy
- b. Discuss the indications for trans-hepatic percutaneous cholecystostomy tube and anticipated longterm success of this strategy
- c. Describe error traps leading to vasculobiliary injury in the setting of inflammation and obliteration of the cystic plate and safe operative management in this setting
- d. Discuss the clinical and imaging features of Mirizzi's syndrome and describe management strategies
- e. Discuss the indications for operative intervention for documented gallbladder polyps and the role for laparoscopic versus open cholecystectomy
- f. Discuss the management of a histopathologic diagnosis of a T1a gallbladder carcinoma identified incidentally in a gallbladder specimen removed for symptomatic cholelithiasis

Systems-Based Practice:

By the end of the HPB rotation, the HO V resident will be able to:

1. Appraise the system and its role in delivering optimal health care, including inferring whether "system problems" negatively impact quality of care
2. Integrate systems knowledge to understand how aspects of the health care context, i.e., the health care organization, the larger society, affect their own practice
3. Evaluate how types of medical practice and delivery systems differ from one another, including differing methods of controlling health care costs and allocating resources
4. Demonstrate cost-effective health care and resource allocation that does not compromise quality of care
5. Advocate for quality patient care and assist patients in dealing with system complexities
6. Coordinate complex patient care including obtaining basic and advanced tests and scheduling procedures, both elective and emergency. Demonstrate an ability to interpret diagnostic results and limit the use of diagnostics to only those that are necessary for optimal patient care. Demonstrate an ability to effectively manage and coordinate a team in charge of ordering basic and advanced diagnostic testing
7. Use multidisciplinary consultations, laboratory, radiographic and other diagnostic and consultative services appropriately; demonstrate an ability to interpret such test results in a manner that expedites overall patient care plans and lead a team in organizing coordination of multidisciplinary care
8. Collaborate with health care professionals associated with the Hepatopancreatobiliary Surgery Service (physician assistants, nurse coordinators, discharge planners) and demonstrate leadership in managing multidisciplinary care teams

Practice-Based Learning and Improvement:

By the end of the HPB rotation, the HO V resident will be able to:

1. Analyze patient care experience and any near miss or complication using process improvement methodology, and take a leadership role in addressing necessary personal and system-wide changes to prevent future adverse events drawing on skills obtained in the QI/TAPS curriculum
2. Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems
3. Lead the Advanced Endoscopy, Hepatopancreatobiliary, Gastrointestinal and HPB Surgery Conference in collaboration with the Advanced GI fellows and the weekly HPB pre-op conference, and provide evidence-based contributions to the other educational activities including Multi-disciplinary Tumor

Conferences, HPB Surgery conference, and Multi-Site HPB Grand Rounds
4. Design a systematic approach to evaluate the results of one's own practice
5. Critically evaluate experimental design and interpret results in published literature (or planned research), including true randomization, sampling error, blinded studies, prospective versus retrospective evaluations, and the advantages and weaknesses of each; knows the distinction between dependent and independent variables under evaluation and knows the meaning of confidence intervals or "P" value in suggesting statistical significance
6. Apply their ability to efficiently use information technology to manage information, access on-line medical information; and support their own education

Professionalism:

By the end of the HPB rotation, the HO V resident will be able to:

1. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development
2. Demonstrate appropriate sensitivity to the hepatopancreatobiliary surgery patient population, and understand how their needs may be different from other patients
3. Recognize the importance and impact of timely record keeping and prompt and professional return of pages on the quality of general surgery care
4. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices
5. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities
6. Demonstrate a commitment to the ethical and legal aspects of surgery including patient privacy and autonomy, futility of care, end of life care and decision making and integrate these issues into patient care and team management; serve as a role model for ethical behavior in the context of general surgical care
7. Demonstrate honesty, reliability, compassion, and respectfulness in working with patients and colleagues, and serve as a role model for these traits for junior colleagues; demonstrate an ability to lead a team in a manner consistent with underlying principles of honesty, reliability, compassion, and respectfulness
8. Define the role of research in the context of patient care, and the importance of peer/IRB review of protocols, ethical considerations, and the limitations of such endeavors. Explain the logistic and conceptual complexity of the patient research consent process; participate in some aspects of clinical/basic science-translational research in the context of clinical care

Interpersonal and Communication Skills:

By the end of the HPB rotation, the HO V resident will be able to:

1. Collaborate with other health care personnel, being sensitive to their roles and abilities
2. Communicate with colleagues and staff in a manner that is consistent with patient-centered focus of the health care team and sets a positive example for junior peers
3. Communicate basic care decisions with patients and their families, explaining recommendations to them in terms each individual can comprehend
4. Demonstrate respect for patients' right to privacy and autonomy
5. Demonstrate respect for the sexual orientation, moral, ethical, or religious characteristics of the patient and family, and other members of the healthcare team, and an ability to work with a culturally diverse range of patients and colleagues
6. Demonstrate and employ effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills